

Remarks

Claims 1, 4-9, and 14-29 are currently pending in the Application. The Applicant appreciates the Examiner's acknowledgement that claims 14-15 and 27-28 contain allowable subject matter.

I. Interview Summary

The Applicant's Representatives Carlo Cotrone and Chris King appreciate Examiner Anna Momper and Examiner Bradley King taking the time to conduct a telephone interview on July 6, 2010. During the interview, the Applicant's Representatives and the Examiners discussed the rejection of claim 1 in the present Office action. Examiner Momper indicated that the arguments to be presented in this Response were persuasive in pointing out the shortcomings of the disclosure of Laufenberg et al. (U.S. Patent No. 6,773,367) with respect to claim 1. These arguments are presented below.

II. Claim Rejections – 35 U.S.C. § 103

A. Claims 1, 4-5, 16 and 25

Claims 1, 4-5, 16 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder et al. (U.S. Published Application 2003/0224888 A1) in view of Laufenberg et al. (U.S. Patent No. 6,773,367).

Independent claim 1 recites in part:

A transmission system comprising: . . .

a two-state coupling device, wherein a first state of the two-state coupling device corresponds to a phase for starting the engine, in which the shaft (1) of the alternator-starter (ATD) drives the crankshaft (V) of the engine (M) with a first transmission ratio, and a second state of the two-state coupling device corresponds to a phase in which the crankshaft (V) of the engine (M) drives the shaft (1) of the alternator-starter (ATD) with a second transmission ratio, and in that the first transmission ratio is higher than the second transmission ratio; . . .

wherein the two-state coupling device is arranged between the first (2) and the second (3) pulleys and includes at least one coupling element (10) that moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD); and

wherein said longitudinally movable coupling element comprises a selector (10) having a helical connection (12) to the shaft (1) of the alternator-starter (ATD), having at least a lateral face (10', 10'') bearing a power transmission element (15, 16), and facing a flank (2', 3') of one of the first (2) and second (3) pulleys, and a control element (11, 14, 18, 22, 22') able to move with respect to the selector (10) and generating a minimum torque that is required for the correct displacement of the selector (10) along the helical connection (12).

The Applicant respectfully traverses this rejection. Wilder in view of Laufenberg fails to disclose the features of claim 1. The Examiner concedes that "Wilder et al. fails to explicitly disclose the two-state coupling device is arranged between the first and the second pulleys and includes at least one coupling element that moves longitudinally parallel to the axis of the shaft of the alternator-starter between two positions corresponding to the first and second coupling device states respectively and wherein said longitudinally movable coupling element comprises a selector having a helical connection to the shaft of the alternator-starter, having at least a lateral

face bearing a power transmission element, and facing a flank of one of the first and second pulleys, and a control element able to move with respect to the selector and generating a minimum torque that is required for the correct displacement of the selector along the helical connection.” (Office action, pp. 4-5).

Laufenberg does not remedy the deficiencies of Wilder. Laufenberg fails to disclose “at least one coupling element (10) that moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, *as a function of the relative rotation speed* between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD),” as recited in claim 1 (emphasis added).

Rather, Laufenberg discloses a belt drive two speed shift mechanism that “allows conveniently and easily *manually shifting* between two drive ratios by moving a shift collar between a position engaged with a first pulley to be driven by a belt at one rotational speed, and a second pulley to be driven by a belt at another speed.” (Col. 1, lines 9-14) (emphasis added). In a high speed position (FIG. 3), a shift collar 62 engages a high speed driven pulley 36, thereby connecting pulley 36, shift collar 62, shift hub 38, and tube 46 together for rotation together by high speed drive 22. (Col. 3, lines 19-25). In a low speed position (FIG. 4), the shift collar 62 engages a low speed driven pulley 28, thereby connecting pulley 28, shift collar 62, shift hub 38, and tube 46 together for rotation by low speed belt drive 20. (Col. 3, lines 26-35).

A detent mechanism 78 (FIG. 5) releasably holds the shift collar 62 in either the high speed position or the low speed position. (Col. 3, lines 37-38). “To release shift collar 62, sliding plate 84 is squeezed toward fixed plate 88 to release balls 80, as denoted by the opposing arrows in FIG. 3. Shift collar 62 is now quickly and easily *manually movable* axially between the high and low speed positions (FIGS. 3 and 4, respectively) for allowing selecting high or low speed operation, as desired. Once in a selected position, balls 80 will be received in the corresponding receptacles 66 or 68 for holding shift collar 62 in the selected position. Desirably, no releasing of tensioner 42 or 44 is required, no moving of the belt or belts is required, and the shifting can be accomplished easily from the side of the combine.” (Col. 3, lines 49-60) (emphasis added).

Thus, the shift collar 62 of Laufenberg is manually moved between the high and low speed positions. In contrast, in the claimed invention, as recited in claim 1, the “coupling element (10) . . . moves longitudinally parallel to the axis of the shaft (1) of the alternator-starter (ATD) between two positions corresponding to the first and second coupling device states respectively, as a function of the relative rotation speed between one of said first (2) or second (3) pulleys and the shaft (1) of the alternator-starter (ATD).” Therefore, Laufenberg does not disclose the coupling element of claim 1.

Additionally, Wilder and Laufenberg fail to disclose a transmission system “wherein said longitudinally movable coupling element comprises a selector (10) having a helical connection (12) to the shaft (1) of the alternator-starter (ATD), having at least a lateral face (10', 10'') bearing a power transmission element (15, 16), and facing a flank (2', 3') of one of the first (2) and second (3) pulleys, and a control element (11, 14, 18, 22, 22') able to move with respect to the selector (10) and generating a minimum torque that is required for the correct displacement of the selector (10) along the helical connection (12),” as recited in claim 1.

For at least the reasons above, claim 1 is patentable over Wilder and Laufenberg. Claims 4-5, 16 and 25 depend from claim 1 and are also allowable for at least the reasons above and because each recites additional patentable subject matter.

B. Claims 6-9, 17-24, 26 and 29

Claims 6-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder in view of Laufenberg and further in view of Mueller (U.S. Patent No. 4,526,257). Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder in view of Laufenberg and further in view of Clark et al. (U.S. Patent No. 5,305,719). Claims 18-19 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder in view of Laufenberg and further in view of Heimark (U.S. Patent No. 5,909,075). Claims 20, 26 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder in view of Laufenberg and further in view of Seung et al. (U.S. Patent No. 4,662,861). Claims 22 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder in view of Laufenberg and further in view of Mueller and further in view of Man et al. (U.S. Published Application No. 2002/0117860). Claim 23

stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilder in view of Laufenberg and further in view of Mueller and Man and further in view of Trout, Jr. (U.S. Patent No. 2,699,854). The Applicant respectfully traverses these rejections.

For at least the reasons above, claim 1 is patentable over Wilder and Laufenberg. None of Mueller, Clark, Heimark, Seung, Man, and Trout, Jr. alone or in combination remedy the deficiencies of Wilder and Laufenberg discussed above in reference to claim 1. Claims 6-9, 17-24, 26 and 29 depend from claim 1 and are also allowable for at least the reasons above and because each recites additional patentable subject matter.

III. Conclusion

In light of the above, the Applicant respectfully requests allowance of claims 1, 4-9, and 14-29. The Examiner is invited to contact the undersigned at the below number to further discuss this application.

Respectfully submitted,



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